

S NAVIGATION AND (EXIT? OR POI OR POINT) AND SEARCH? AND DISTANC

Your SELECT statement is:

S NAVIGATION AND (EXIT? OR POI OR POINT) AND SEARCH? AND DISTANC

Items File

9	2: INSPEC_1969-2004/Aug W1
2	6: NTIS_1964-2004/Aug W3
8	8: Ei Compendex(R)_1970-2004/Aug W1
16	34: SciSearch(R) Cited Ref Sci_1990-2004/Aug W2
1	81: MIRA - Motor Industry Research_2001-2004/Jul
4	94: JICST-EPlus_1985-2004/Jul W3
3	95: TEME-Technology & Management_1989-2004/Jun W1
1	103: Energy SciTec_1974-2004/Jul B2
5	144: Pascal_1973-2004/Aug W1
1	292: GEOBASE(TM)_1980-2004/Aug B1

10 files have one or more items; file list includes 18 files.

?

T S2/3,KWIC/1-14

2/3,KWIC/1 (Item 1 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
(c) 2004 Inst for Sci Info. All rts. reserv.

09803320 Genuine Article#: 451KH No. References: 16

Title: Homing in wood ants, *Formica japonica*: Use of the skyline panorama

Author(s): Fukushi T (REPRINT)

Corporate Source: Miyagi Univ Educ,Dept Biol, Aoba Ku,Sendai/Miyagi
9800845/Japan/ (REPRINT); Miyagi Univ Educ,Dept Biol, Aoba
Ku,Sendai/Miyagi 9800845/Japan/

Journal: JOURNAL OF EXPERIMENTAL BIOLOGY, 2001, V204, N12 (JUN), P20(

ISSN: 0022-0949 Publication date: 20010600

Publisher: COMPANY OF BIOLOGISTS LTD, BIDDER BUILDING CAMBRIDGE C
PARK COWLEY RD, CAMBRIDGE CB4 4DL, CAMBS, ENGLAND

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Publication date: 20010600

...Abstract: various release sites up to 11 m sideways from the training
route intersected at a point far (approximately 13 m) behind the
nest. This result suggests that the ants used distant...

...their familiar skyline panorama, they moved in their home direction only
for an extremely short distance (0.1-0.4 m rather than the usual 7.9
m) and then started a systematic search programme. Hence, in the
present context, skylight information is not used, at least not
extensively...

2/3,KWIC/2 (Item 2 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
(c) 2004 Inst for Sci Info. All rts. reserv.

08649004 Genuine Article#: 312MN No. References: 18

Title: Local appearance space for recognition of navigation landmarks

Author(s): deVerdiere VC (REPRINT) ; Crowley JL

Corporate Source: INRIA RHONE ALPES,IMAG, LAB GRAVIR, PROJECT PRIMA
AVE EUROPE/F-38330 MONTBONNOT ST MARTIN//FRANCE/ (REPRINT)

Journal: ROBOTICS AND AUTONOMOUS SYSTEMS, 2000, V31, N1-2 (APR 30)

ISSN: 0921-8890 Publication date: 20000430

Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Title: Local appearance space for recognition of navigation landmarks

Publication date: 20000430

...Abstract: axes of a local appearance space. Each local neighborhood of an image projects to a point in this space. By projecting the set of all neighborhoods of a certain size which...

...and associating them with nearby surfaces. To reduce memory requirements, we propose an efficient tree- search algorithm for the association of points to surfaces. This algorithm directly produces a list of surfaces sorted by distance from the point which represents the observed neighborhood.

Our results show that in many common situations, a single...

...obtain the correct recognition. Furthermore, the confidence of a recognition is easily estimated from the distance from the point to

?□ the surface, and the uniqueness determined by the number of surfaces which lie near the point. Robust recognition is easily obtained by reinforcing matching using multiple windows and their mutual spatial...

2/3,KWIC/3 (Item 3 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

(c) 2004 Inst for Sci Info. All rts. reserv.

08642475 Genuine Article#: 311BU No. References: 18

Title: An online algorithm for improving performance in navigation

Author(s): Blum A (REPRINT) ; Chalasani P

Corporate Source: CARNEGIE MELLON UNIV,SCH COMP SCI/PITTSBURGH//P. (REPRINT); HBK INVESTMENTS,/NEW YORK//NY/10017

Journal: SIAM JOURNAL ON COMPUTING, 2000, V29, N6 (APR 18), P1907-1938

ISSN: 0097-5397 Publication date: 20000418

Publisher: SIAM PUBLICATIONS, 3600 UNIV CITY SCIENCE CENTER, PHILADELPHIA PA 19104-2688

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Title: An online algorithm for improving performance in navigation

Publication date: 20000418

Abstract: We consider the following scenario. A point robot is placed at some start location s in a 2-dimensional scene containing oriented...

...following guarantee: in the first k less than or equal to n trips, the average distance per trip is at most $O(\sqrt{n/k})$ times the length of

the shortest s-t path in the scene, where n is the Euclidean distance between s and t . We also show a matching lower bound for deterministic strategies. These...

...Our algorithm is based on a novel method for making an optimal trade-off between search effort and the goodness of the path found. We improve this algorithm to a smooth...

2/3,KWIC/4 (Item 4 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
(c) 2004 Inst for Sci Info. All rts. reserv.

08628682 Genuine Article#: BP96X No. References: 60

Title: Large-scale navigation: The insect case

Author(s): Wehner R (REPRINT)

Corporate Source: UNIV ZURICH,INST ZOOL, WINTERTHURERSTR 190/CH-80
ZURICH//SWITZERLAND/ (REPRINT)

, 1999, V1661, P1-20

ISSN: 0302-9743 Publication date: 19990000

Publisher: SPRINGER-VERLAG BERLIN, HEIDELBERGER PLATZ 3, D-14197 B
GERMANYLECTURE NOTES IN COMPUTER SCIENCE

Series: LECTURE NOTES IN COMPUTER SCIENCE

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Title: Large-scale navigation : The insect case

Publication date: 19990000

...Abstract: subterranean burrows for distances of several hundred metres by winding their way in a tortuous search for food, and then return in an amazingly straight line to the starting point of their foraging trip. Their predominant way of navigation is path integration including a compass that is based on skylight (polarization) patterns invisible to...

...Identifiers--PATH INTEGRATION; COGNITIVE MAPS; DESERT ANTS;
CATAGLYPHIS-FORTIS; SPATIAL MEMORY; HONEY-BEES; ROUTE; LAND
DISTANCE; VECTORS

2/3,KWIC/5 (Item 5 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
(c) 2004 Inst for Sci Info. All rts. reserv.

06690236 Genuine Article#: ZK763 No. References: 6

Title: The Connectivity Server: fast access to linkage information on the

Web

Author(s): Bharat K; Broder A; Henzinger M (REPRINT) ; Kumar P; Venkatasubramanian S

Corporate Source: DIGITAL EQUIPMENT CORP,SYST RES CTR, 130 LYTTON / ALTO//CA/94301 (REPRINT); DIGITAL EQUIPMENT CORP,SYST RES CTR/P ALTO//CA/94301; STANFORD UNIV,DEPT COMP SCI/PALO ALTO//CA/94301

Journal: COMPUTER NETWORKS AND ISDN SYSTEMS, 1998, V30, N1-7 (APR 469-477)

ISSN: 0169-7552 Publication date: 19980400

Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NET

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Publication date: 19980400

...Abstract: have built a server that provides linkage information for all pages indexed by the AltaVista search engine. In its basic operation, the server accepts a query consisting of a set L of one or more URLs and returns a list of all pages that point to pages in L (predecessors) and a list of all pages that are pointed to...

...produce the entire neighbourhood (in the graph theory sense) of L up to a given distance and can include information about all links that exist among pages in the neighbourhood.

Although some of this information can be retrieved directly from Alta Vista or other search engines, these engines are not optimized for this purpose and the process of constructing the...

...have built two applications that use the Connectivity Server: a direct interface that permits fast navigation of the Web via the predecessor/successor relation, and a visualization tool for the neighbourhood...

2/3,KWIC/6 (Item 6 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

(c) 2004 Inst for Sci Info. All rts. reserv.

06130811 Genuine Article#: XX103 No. References: 17

Title: Time-optimal smooth-path motion planning for a mobile robot with kinematic constraints

Author(s): Jiang K (REPRINT) ; Seneviratne LD; Earles SWE

Corporate Source: UNIV LONDON KINGS COLL,DEPT MECH ENGN/LONDON V 2LS//ENGLAND/ (REPRINT)

Journal: ROBOTICA, 1997, V15, 5 (SEP-OCT), P547-553

ISSN: 0263-5747 Publication date: 19970900

Publisher: CAMBRIDGE UNIV PRESS, 40 WEST 20TH STREET, NEW YORK, N
10011-4211

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Publication date: 19970900

...Abstract: Further, it derives a minimum time first derivative smooth path, as opposed to a minimum distance path which is commonly given by various present solution techniques. The problem is solved in three stages: (i) A reduced visibility graph for a point object is obtained. (ii) The reduced visibility graph is converted into a feasible reduced visibility...

...the size and kinematic constraints of the robot. (iii) The A* algorithm is used to search the feasible reduced visibility graph with the cost function being the time of travel, to...

Research Fronts: 95-1992 003 (MOTION PLANNING OF MOBILE ROBOTS; FA; COLLISION DETECTION; REAL-TIME NAVIGATION ; POLYGONAL OBSTAC REINFORCEMENT LEARNING)

2/3,KWIC/7 (Item 7 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

(c) 2004 Inst for Sci Info. All rts. reserv.

06098665 Genuine Article#: XU758 No. References: 54

Title: Landmark stability: Further studies pointing to a rôle in spatial ? learning

Author(s): Biegler R (REPRINT) ; Morris RGM

Corporate Source: UNIV EDINBURGH,CTR NEUROSCI/EDINBURGH EH8
9LE/MIDLOTHIAN/SCOTLAND/ (REPRINT); UNIV EDINBURGH,DEPT
PHARMACOL/EDINBURGH EH8 9LE/MIDLOTHIAN/SCOTLAND/

Journal: QUARTERLY JOURNAL OF EXPERIMENTAL PSYCHOLOGY SECTION
AND PHYSIOLOGICAL PSYCHOLOGY, 1996, V49, N4 (NOV), P307-345

ISSN: 0272-4995 Publication date: 19961100

Publisher: PSYCHOLOGY PRESS, 27 CHURCH RD, HOVE, EAST SUSSEX, EN
2FA

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Publication date: 19961100

...Abstract: to investigate the possible role of landmark stability in spatial learning. Rats were trained to search in a large arena for food hidden at a consistent distance and direction from either a

single radially symmetric landmark or an array of two landmarks...

...food being available given either cue. Experiment I used vestibular disorientation to ensure control of search location by experimenter-controlled cues. The results showed that making either a single landmark or...

...of two adjacent landmarks the sole spatial predictor of reward location reduced the accuracy of search compared to a condition where both the landmark array and context cues were reliable spatial...

...had no effect when training was conducted using an array of two landmarks located some distance from each other. Context cues, when tested alone, triggered very little searching in appropriate locations, and the absolute magnitude of control over search was insufficient to account for the superiority of stable landmarks. The better learning with a...

...describe two experiments concerned with identifying the psychological processes of allocentric spatial learning. The results point to the idea that landmark stability is an important factor in spatial learning. Specifically, they...

...Identifiers--HEAD-DIRECTION CELLS; PIGEONS USE; VISUAL LANDMARKS; PERFORMANCE; MEMORY; RATS; NAVIGATION; CUES; BEES; PSYCHOFO

2/3, KWIC/8 (Item 8 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
(c) 2004 Inst for Sci Info. All rts. reserv.

05751268 Genuine Article#: WV450 No. References: 30

Title: Robot pose estimation in unknown environments by matching 2D rang scans

Author(s): Lu F (REPRINT) ; Milios E

Corporate Source: YORK UNIV,DEPT COMP SCI/N YORK/ON M3J 1P3/CANAD/ (REPRINT)

Journal: JOURNAL OF INTELLIGENT & ROBOTIC SYSTEMS, 1997, V18, N3 (M/ 249-275

ISSN: 0921-0296 Publication date: 19970300

Publisher: KLUWER ACADEMIC PUBL, SPUIBOULEVARD 50, PO BOX 17, 3300 DORDRECHT, NETHERLANDS

Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Publication date: 19970300

...Abstract: is based on matching data points with tangent directions in two scans and minimizing a distance function in order to solve the displacement between the scans. The second algorithm establishes correspondences between points in the two scans and then solves the point -to- point least-squares problem to compute the relative pose of the two scans. Our methods work...

?□.Identifiers--REGISTRATION; NAVIGATION; IMAGES

...Research Fronts: BREAKDOWN POINTS)

95-1992 001 (MOTION PLANNING OF MOBILE ROBOTS; FAST COLLISION DETECTION; REAL-TIME NAVIGATION ; POLYGONAL OBSTACLES; REINF LEARNING)

2/3,KWIC/9 (Item 1 from file: 81)

DIALOG(R)File 81:MIRA - Motor Industry Research

(c) 2004 MIRA Ltd. All rts. reserv.

42057

A Profile of Drivers' Map-Reading Abilities

STREETER LA; et al

Corporate Source: Bell Commun Res

Human Factors, Apr 86

April 1, 1986

Page : 223

Collation : (17 p, 11 fig, 15 ref)

Document Type: JOURNAL Language: ENGLISH

Record Type: ABSTRACT

Supplier Record Type: AA

To create better aids for everyday surface navigation , people's navigational preferences, habits, experiences, abilities, and route-selection strategies were examined. Self-described...

...varying degrees of familiarity with an area were compared with routes generated by standard graph- search procedures. A shortest-path, breadth-first route characterised half of the "expert" routes, whereas none of the graph- search procedures matched "intermediate" and "novice" routes. A good predictor of whether people chose a particular road was whether the sum of A + B + C (where A equals the straight-line distance from the start to the road, B equals the distance travelled on the road, and C equals the straight-line distance from the departure point on the

road to the destination) did not exceed the straight-line distance between start and destination by more than about 20%. (Auth)

2/3,KWIC/10 (Item 1 from file: 95)

DIALOG(R)File 95:TEME-Technology & Management

(c) 2004 FIZ TECHNIK. All rts. reserv.

01420277 20000509189

Local appearance space for recognition of navigation landmarks

Verdiere, VCde; Crowley, JL

Lab. GRAVIR-IMAG, Inst. Nat. de Recherche en Inf. et Autom., Montbonnot
Saint Martin, F

Proceedings of 6th International Symposium on Intelligent Robotic Systems
'98, 21-23 July 1998, Edinburgh, UKRobotics and Autonomous Systems, v31,
n1-2, pp61-69, 2000

Document type: journal article; 06 Conference paper Language: English

Record type: Abstract

ISSN: 0921-8890

Local appearance space for recognition of navigation landmarks

2000

ABSTRACT:

...and associating them with nearby surfaces. To reduce memory requirements, we propose an efficient tree- search algorithm for the association of points to surfaces. Our experimental results show that in many...

...obtain the correct recognition. Furthermore, the confidence of a recognition is easily estimated from the distance from the point to the surface, and the uniqueness determined by the number of surfaces which lie near the point.

IDENTIFIERS: RECHNERUNTERSTUETZTE NAVIGATION ; HAUPTKOMPONENTE
PRINZIPIELLE KOMPONENTENANALYSE; Mobiler Roboter; Objekterkennung

2/3,KWIC/11 (Item 2 from file: 95)

DIALOG(R)File 95:TEME-Technology & Management

(c) 2004 FIZ TECHNIK. All rts. reserv.

00982696 M96040220667

Robots for anti-personnel mine search

(Mobile Roboter fuer die automatische Minensuche)

Nicoud, J-D; Maechler, P
Swiss Federal Inst. of Technol., Lausanne, CH
Control Engineering Practice, v4, n4, pp493-498, 1996
Document type: journal article Language: English
Record type: Abstract
ISSN: 0967-0661

Robots for anti-personnel mine search
1996

ABSTRACT:

...60 nations. Well trained dogs are efficient for localizing mines, but they tire quickly. Manual searching , by prodding the ground, is used in demining campaigns, at an average cost of USD...

...The Pemex-B is a simple design with two driving wheels and a third supporting point where the mines are sensed. Navigation software has been tested on reduced-scale models. A larger model participated in the IAV

...
DESCRIPTORS: MILITARY ENGINEERING; AUTONOMOUS ROBOTS; OBJECT
REMOTELY PILOTED VEHICLES; DISTANCE MEASUREMENT; COMPASSES
RESULTS

IDENTIFIERS: MINENSUCHGERAET; MEHRSENSORSYSTEM; HODOMETER;
POSITIONIERUNGSSYSTEM; Minensuchgeraet; Roboter; ferngelenktes Fahrzeug
Navigation

2/3,KWIC/12 (Item 3 from file: 95)

DIALOG(R)File 95:TEME-Technology & Management
(c) 2004 FIZ TECHNIK. All rts. reserv.

00703978 I93068944927

Two-dimensional robot navigation among unknown stationary polygonal obstacles

(Orientierung eines zweidimensionalen Roboters zwischen unbekannten, stationären polygonalen Hindernissen)

Foux, G; Heymann, M; Bruckstein, A

Dept. of Comput. Sci., Technion-Israel Inst. of Technol., Haifa, Israel

IEEE Transactions on Robotics and Automation, v9, n1, pp96-102, 1993

Document type: journal article Language: English

Record type: Abstract

ISSN: 1042-296X

Two-dimensional robot navigation among unknown stationary polygonal obstacles
1993

ABSTRACT:

...all of which are initially unknown to the robot. The environment is learned during the navigation process by use of a laser range-finding device, and new knowledge is integrated with...

...a new set of expanded polygonal obstacles, allowing the robot to be treated as a point, and the navigation problem is reduced to point navigation among unknown polygonal obstacles. A navigation graph is built from the transformed obstacles and used to search for a piecewise linear path to the destination. The algorithm is proved to converge to...

...**DESCRIPTORS:** ARTIFICIAL INTELLIGENCE; ORIENTATION; DISTANCE MEASUREMENT; LASER APPLICATIONS; CURVES...

IDENTIFIERS: OBSTACLE AVOIDANCE; UNKNOWN STATIONARY POLYGON; LASER RANGE FINDING DEVICE; NAVIGATION GRAPH; PIECEWISE LINEAR zweidimensionaler Roboter; Navigation

2/3, KWIC/13 (Item 1 from file: 103)

DIALOG(R)File 103:Energy SciTec

(c) 2004 Contains copyrighted material. All rts. reserv.

04147892 KR-97-000108; EDB-97-056596

Title: A landmark position estimation method using a color image for an indoor mobile robot

Author(s): Yu, Won Pil; Chung, Myung Jin (KAIST, Taejon (Korea, Republic of))

Source: Chongi Hakhoe Nonmunchi (Transactions of the Korean Institute of Electrical Engineers) v 45:2. Coden: CHNODD ISSN: 0254-4172

Publication Date: Feb 1996

p 310-318

Language: Korean

Publication Date: Feb 1996

...Abstract: color image is presented. The mobile robot(K2A) takes an image of a corridor and searches for the door and pillar, which are the given landmarks. The color information is used...

...represent the presence of the landmarks, Image Mode is defined. This method adopts Kullback information distance. If a landmark is detected, with the color information, the mobile robot identifies the

vertical line of the landmark and its crossing point and an experimental navigation is performed. (author). 13 refs., 12 figs., 9 tabs.

2/3,KWIC/14 (Item 1 from file: 292)

DIALOG(R)File 292:GEOBASE(TM)

(c) 2004 Elsevier Science Ltd. All rts. reserv.

01185740 SUPPLIER NO. 2482101

Navigating desert ants (*Cataglyphis fortis*) learn to alter their search patterns on their homebound journey

Cheng K.; Wehner R.

ADDRESS: K. Cheng, Department of Psychology, Macquarie University, Sydney, NSW 2109, Australia

EMAIL: kcheng@axon.bhs.mq.edu.au

Physiological Entomology, 27/4 (285-290), 2002

COUNTRY OF PUBLICATION: United Kingdom

ISSN: 0307-6962

DOCUMENT TYPE: Journal; Article

LANGUAGES: English SUMMARY LANGUAGES: English

NO. OF REFERENCES: 15

Navigating desert ants (*Cataglyphis fortis*) learn to alter their search patterns on their homebound journey

...run off a global vector estimated on their outbound journey, and then engage in systematic search consisting of ever-increasing loops interrupted by returns to the starting point of search , Desert ants (*Cataglyphis fortis*; Wehner, 1983) were trained to travel 6 m down a channel...

...estimate of the length of the global vector calculated on their outbound trip. The median distance of search on a 5-min test gave an estimate of the centre of the search pattern. Relative to controls, the experimental ants did not increase their estimated length of global vector, but changed their search patterns, searching on average further from the start than the controls. Tests of the outbound journey, however, revealed no differences between groups. Desert ants can learn to modify their search pattern based on experience.

DESCRIPTORS:

ant; navigation ; learning

?

T S2/7/10

2/7/10 (Item 1 from file: 95)
DIALOG(R)File 95:TEME-Technology & Management
(c) 2004 FIZ TECHNIK. All rts. reserv.

01420277 20000509189

Local appearance space for recognition of navigation landmarks
Verdiere, VCde; Crowley, JL
Lab. GRAVIR-IMAG, Inst. Nat. de Recherche en Inf. et Autom., Montbonnot
Saint Martin, F

Proceedings of 6th International Symposium on Intelligent Robotic Systems
'98, 21-23 July 1998, Edinburgh, UKRobotics and Autonomous Systems, v31,
n1-2, pp61-69, 2000

Document type: journal article; 06 Conference paper Language: English

Record type: Abstract

ISSN: 0921-8890

ABSTRACT:

This paper presents a technique for visual recognition in which the appearance of objects is represented by families of surfaces in a local appearance space. An orthogonal family of local appearance descriptors is obtained by applying principal components analysis to small image windows. These descriptors define the axes of a local appearance space. Visual landmarks may be recognized by projecting windows from newly acquired images into the descriptors space and associating them with nearby surfaces. To reduce memory requirements, we propose an efficient tree-search algorithm for the association of points to surfaces. Our experimental results show that in many common situations, a single window is sufficient to obtain the correct recognition. Furthermore, the confidence of a recognition is easily estimated from the distance from the point to the surface, and the uniqueness determined by the number of surfaces which lie near the point.

?

2/7/4 (Item 4 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

(c) 2004 Inst for Sci Info. All rts. reserv.

08628682 Genuine Article#: BP96X Number of References: 60

Title: Large-scale navigation: The insect case

Author(s): Wehner R (REPRINT)

Corporate Source: UNIV ZURICH,INST ZOOL, WINTERTHURERSTR 190/CH-805
ZURICH//SWITZERLAND/ (REPRINT)

, 1999, V1661, P1-20

ISSN: 0302-9743 Publication date: 19990000

Publisher: SPRINGER-VERLAG BERLIN, HEIDELBERGER PLATZ 3, D-14197 BE
GERMANYLECTURE NOTES IN COMPUTER SCIENCE

Series: LECTURE NOTES IN COMPUTER SCIENCE

Language: English Document Type: ARTICLE

Abstract: Despite their miniature, 0.1-mg brains Cataglyphis ants of the
Sahara desert are particularly impressive navigators. They leave their
subterranean burrows for distances of several hundred metres by winding
their way in a tortuous search for food, and then return in an
amazingly straight line to the starting point of their foraging trip.

Their predominant way of navigation is path integration including a
compass that is based on skylight (polarization) patterns invisible to
man. Path integration is supplemented by landmark guidance for finally
pin-pointing the goal. In this context, matching of retinotopically
fixed panoramic views ("snapshots") and local vectors accompanying
such views are further components of the ant's navigational toolkit.
Behavioural and neurobiological analyses reveal that in the insect's
cockpit - its brain - a high-level task is accomplished by the
collective interaction of a number of low-level modules.

?